

Serial No.: 10/667,830

Filing Date: 9/22/2003

Attorney Docket No. H0004501

Title: RADIO FREQUENCY INTERFERENCE MONITOR

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**REMARKS**

The Office Action mailed on March 24, 2008 has been reviewed. Claims 1-40 are pending in this application.

*Information Disclosure Statement*

Applicant respectfully requests that a copy of the 1449 form, listing all references that were submitted with the Information Disclosure Statement filed on even date herein, marked as being considered and initialed by the Examiner, be returned with the next official communication.

*Rejections Under 35 U.S.C. § 103*

Claims 1 and 33 were rejected under 35 USC § 103(a) as being unpatentable over Karabinis et al. (U.S. Patent No. 2003/0073436) in view of Yost (U.S. Patent No. 6,684,061) and further in view of Cooper (U.S. Patent No. 6,611,795).

Independent claim 1 is as follows:

1. (Original) A method of monitoring radio frequency interference (RFI) in a satellite signal, wherein the satellite signal includes a carrier signal, the method comprising:  
calculating a statistical variance estimate (V) based on a plurality (K) of discriminator values ( $d_k$ ) formed in a carrier tracking loop; and  
calculating an RFI detector from the statistical variance estimate.

The Applicant respectfully traverses the rejection of claim 1 under section 103 since none of the references alone or in combination teach all of the aspects as set out in claim 1. As the Examiner acknowledged, the Karabinis reference does not show “that

calculating variance estimate ( $V$ ) based on a plurality ( $k$ ) of discriminator values ( $d_k$ ) formed in the carrier tracking loop.” The Examiner, however, mistakenly, states the Yost reference teaches this aspect. The Yost reference, relates to a system and method of measuring interference reciprocity between uplink and downlink direction in a wireless communication system. See abstract of Yost reference. Further in the sections cited by the Examiner (col. 6, lines 26-50), the Yost reference discusses the standard deviation of a bit error rate (BER) and measurements in an error in correlation. Column 6, lines 26-55 of the Yost reference. The BER is applicable to a digital signal. Column 3, lines 50-66 of the Yost reference. As the Yost reference states, because other randomizing factors affect BER, averaging mathematical techniques are needed. Column 4, lines 44-63 of the Yost reference.

Yost, however, does not teach “a plurality ( $K$ ) of discriminator values ( $d_k$ )” or that they are “formed in a carrier tracking loop,” as is claimed in claim 1 of the present application. Referring to Page 17, line 5 through page 18, line 14 of the present application, a discussion of discriminator values is provided. As discussed, the discriminator ( $d_k$ ) is formed from in-phase ( $I_k$ ) and quadrature-phase components ( $Q_k$ ) in the carrier tracking loop. This has nothing to do with standard deviation of the BER as discussed in the Yost reference. Also refer to Figure 3, of the present application, where an example of a carrier track loop is illustrated. The Yost reference does not teach such a track loop. Since, the Yost reference does not teach a plurality ( $K$ ) of discriminator values ( $d_k$ )” or “a carrier tracking loop,” the rejection of claim 1 under section 103 is improper.

Therefore, the Applicant respectfully requests the withdrawal of the rejection of claim 1 under section 103. In addition, since dependant claims 2-32 depend from and further define patentably distinct independent claim 1, the Applicant respectfully requests the withdrawal of there rejections. Since, the Applicant believes these dependant claims are allowable for at least the above reason, further response to all rejections have not been put forth in this response. The Applicant, however, retains the right to address said rejection if a further response is filed.

Independent claim 33 is as follows:

33. (Original) A method of monitoring narrowband and continuous wave RF interference in a system comprising a plurality of satellites transmitting a respective plurality of satellite signals, at least one reference receiver and a ground station, wherein the at least one reference receiver receives the satellite signals from the plurality of satellites, the method comprising:  
forming, for each satellite signal, a plurality of discriminator values ( $d_k$ ) based on processing, in a carrier tracking loop included within one of the at least one of reference receivers, a carrier signal associated with the satellite signal;  
calculating a statistical variance estimate ( $V$ ) for each satellite signal based on the plurality ( $K$ ) of discriminator values ( $d_k$ ); and  
calculating an RFI detector from the statistical variance estimate.

The Applicant respectfully traverses the rejection of claim 33 under section 103. Each of the cited art either alone or in combination do not teach all of the aspects of claim 33. Claim 33 includes the aspect “a plurality of discriminator values ( $d_k$ ) based on processing, in a carrier tracking loop...” As discussed above in regards to claim 1, the art reference cited by the Examiner, the Yost reference, as teaching this aspect does not. The Yost reference merely relates to a standard deviation of a bit error rate and measurements in an error in correlation. Column 6, lines 26-55 of the Yost reference. Please also refer to the arguments set out in regards to Claim 1. Since, none of the cited references, alone or in combination teach “a plurality of discriminator values ( $d_k$ ) based on processing, in a carrier tracking loop...,” the rejection of claim 33 under section 103 is improper.

Therefore, the Applicant respectfully requests the withdrawal of the rejection of claim 33 under section 103. In addition, since dependant claims 34-43 depend from and

further define patentably distinct independent claim 33, the Applicant respectfully requests the withdrawal of there rejections. Since, the Applicant believes these dependant claims are allowable for at least the above reason, further response to all rejections have not been put forth in this response. The Applicant, however, retains the right to address said rejection if a further response is filed.

*Rejections Under 35 U.S.C. § 103*

Claim 44 was rejected under 35 USC § 103(a) as being unpatentable over Karabinis et al. (U.S. Patent No. 2003/0073436) in view of Yost (U.S. Patent No. 6,684,061).

Independent claim 44 is as follows:

44. (Previously Presented) A method for monitoring continuous wave and narrowband interference in a pass band of a satellite carrier signal, the method comprising in combination:

means for estimating a statistical variance among a plurality of discriminator values formed in a tracking loop, wherein the tracking loop tracks the satellite carrier signal;

means for calculating a standard deviation value from the statistical variance estimate;

means for comparing the standard deviation value to a threshold value; and  
means for detecting an RFI fault when the standard deviation value exceeds the threshold value.

The Applicant traverses the rejection of claim 44 under section 103. Not all of the aspects are taught by the cited references either alone or in combination. For example, neither reference teach “means for estimating a statistical variance among a

plurality of discriminator values formed in a tracking loop, wherein the tracking loop tracks the satellite carrier signal.” The Karabinins et al. reference uses an average antenna pattern discrimination to convert a measured aggregate vicinity ancillary terrestrial component at a give frequency uplink frequency. The average antenna discrimination is obtained by evaluating the antenna discrimination of satellite cell 1 relative to ancillary terrestrial components. See paragraph [0150] of the Karabinins et al. reference. This is not “a plurality of discriminator values formed in a tracking loop,” as is claim in claim 44. Moreover, as discussed above in regards to claim 1, contrary to the Examiners assertion, the Yost reference does not teach a “tracking loop,” but relates to a standard deviation of bit error rate of an upload and download interference values. Column 6, lines 22-55 of the Yost reference. Since, neither reference teach all the aspects of claim 44, the withdrawal of the rejection of claim 44 under section 103 is respectfully requested.

*Allowable Subject Matter*

Claims 2-3 and 34-35 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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**CONCLUSION**

Applicant respectfully submits that claims **1-40** are in condition for allowance and notification to that effect is earnestly requested. If necessary, please charge any additional fees or credit overpayments to Deposit Account No. 502432.

If the Examiner has any questions or concerns regarding this application, please contact the undersigned at the telephone number listed below.

Respectfully submitted,

Date: June 24, 2008

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